

## Flower Hardiness of Precocious Magnolias

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*Magnolia* × *soulangiana* is the most common early-flowering magnolia that is grown in Chattanooga, Tennessee. This is unfortunate because either the flower buds or the just-opened flowers are destroyed by mid or late winter freezes in about four of every five years. *M.* × *soulangiana* and other precocious magnolias such as *M.* × *loebneri* and *M.* *stellata* generally begin their bloom here the second week of March, but a particularly mild winter can bring them out as early as mid February. To circumvent potential flower damage, I prefer to grow precocious magnolias whose flowers withstand colder temperatures than the soulangianas.

Correlation of temperature data with my own records of magnolia blooming time confirms that flowers of certain magnolias can tolerate lower temperatures while in bloom than can others. Indeed, such magnolias do provide a better, more consistent blooming period in the southern U.S.

Over a 15-year period I have kept records of when each of my magnolias has been in good bloom. *Good bloom* is a subjective definition of mine that means a plant has enough fully-open flowers to be readily noticed and appreciated from the street, 25 yards away. Determination of minimum outdoor temperature during this bloom time provides a quantitative indication of the flower hardiness of a given magnolia. Of course, observations for a particular magnolia must be made over a number of years in order to zero in on and confirm hardiness. But Chattanooga's variable winter weather conditions are amenable to this. Minimum temperatures during flowering can vary from the low 40s down to the teens.



**Magnolia 'Spring Snow'**

*Photograph by Gossler Farms Nursery*



**Magnolia 'Jane Platt'**

*Photograph by Gossler Farms Nursery*



*Magnolia 'Elizabeth'*

*Photograph by the author*



Daily low temperature data have been graciously provided by Steve Clark, Manager of the System Operating Department at the Electric Power Board of Chattanooga. Data are collected at an electric substation near Chattanooga's airport. This site is about four miles from my home. Temperatures reported by the media from a site near the Power Board are generally the same or very close to that in my yard. However, my yard can at times be two or three degrees warmer in the fall and two or three degrees cooler in the winter because of the proximity of the impounded Tennessee River. This is not a serious drawback to establishing flower hardiness if data are collected for a significant number of years. Other unmeasured factors might offset or amplify the impact of the true low temperature that occurred, such as the length of time for which that temperature persisted or the co-presence of ice.

Data are presented graphically for six magnolias. Each horizontal line in a figure shows the period of good bloom and minimum temperature during such flowering for a particular year between 1983 and 1998. A dashed line extending downward from some of the horizontal lines shows that bloom was terminated at the lower temperature. A lone  $\times$  on a diagram indicates that there was no decent bloom in one year because of a freeze at that temperature prior to bloom time. Yearly observations are greatest for the oldest plants, 'Leonard Messel' and 'Spring Snow.'

Figures 1 and 2 depict 15 years of data for two *lobneri* cultivars, 'Leonard Messel' and 'Spring Snow.' These are crosses of *M. stellata* and *M. kobus*. The most surprising observation is that flowers of 'Leonard Messel' will withstand temperatures in the low 20s and that 'Spring Snow' flowers are almost as hardy! This is not as good as a Bradford pear, which continues flowering down to at least 17 °F, but it is much better than a *M.  $\times$  soulangiana*, which doesn't keep good flowers below approximately 30 °F.

Because of this flower hardiness, the two plants provide a good flower show almost every year. 'Leonard Messel' has had a good bloom period of between 10 and 20 days here in 14 of 15 years for an

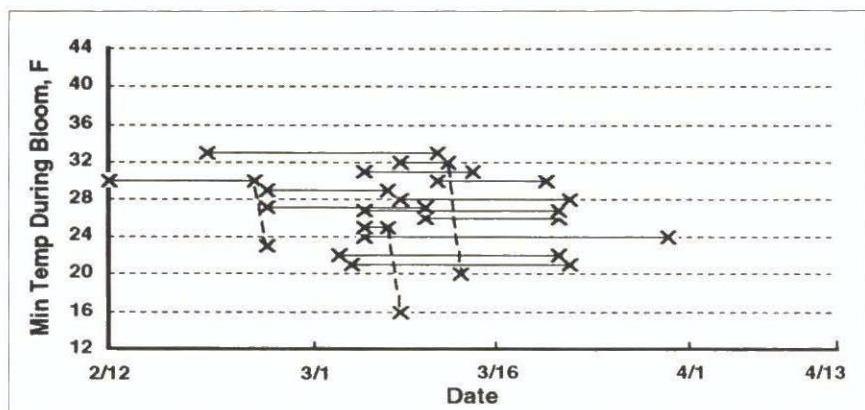


Figure 1 'Leonard Messel' flowering periods (various years)

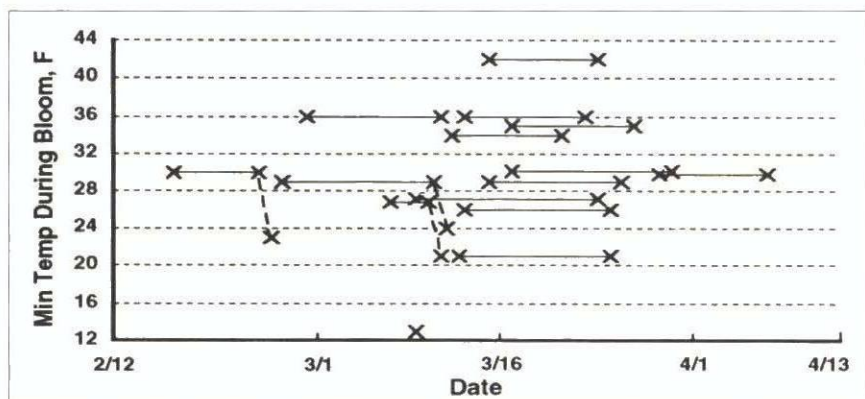


Figure 2 'Spring Snow' flowering periods (various years)

average of 15 days. (In the year shown with a five day bloom period terminated by a freeze, good bloom resumed 10 days later and is not shown in the figure.) The only bad bloom year was 1996 (3 days) because of a plunge to 16 °F on March 8.

Similarly, 'Spring Snow' has had a good bloom period that varied from 8 to 16 days in 13 of 15 years for an average of 12 days. The only years without decent bloom were 1996, when the temperature went as low as 13 °F prior to bloom, and 1998, when a drop to 21 °F ended a four day flowering.

Eleven years of performance are shown in Figure 3 for *M. stellata* 'Jane Platt.' Flowering generally begins about the same time as with 'Spring Snow,' and the flowers are hardy to at least 25 °F. Bloom time in nine of these years varied from 8 to 16 days and averaged 11 days. As with 'Spring Snow,' 1996 and 1998 were the only poor flowering years. More limited data (not shown here) for a *M. stellata* grown from Japanese seed collected in the wild also suggests flower hardiness down to about 25 °F.

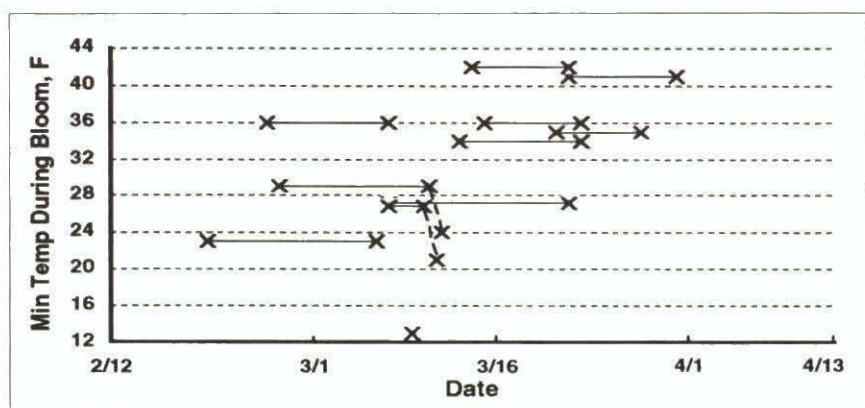


Figure 3 'Jane Platt' flowering periods (various years)

Figure 4 depicts three years of data for a Gresham hybrid, 'Royal Crown.' This is a cross of a *veitchii* (a cross of *M. campbellii* and *M. denudata*) with *M. liliiflora*. Flowers never reached a good blooming stage in at least three other years. However, variable temperatures during flower emergence do not permit establishing those temperature lows that actually terminated bloom. Lack of flower hardiness carries over to new branch growth, with the first growth killed some years. Since 'Royal Crown' wants to bloom about the same time as my *lobneri* and *stellata* cultivars, my general impression is that the flowers of 'Royal Crown' are not hardy much below 30 °F. Overall, this Gresham hybrid has not performed any better than the local *soulangianas*. So it has been cut down and replaced with a *M. sprengeri* var. *diva* seedling. This plant, at least, has never had new branch growth killed by a freeze. And I've given away so many 'Diva'



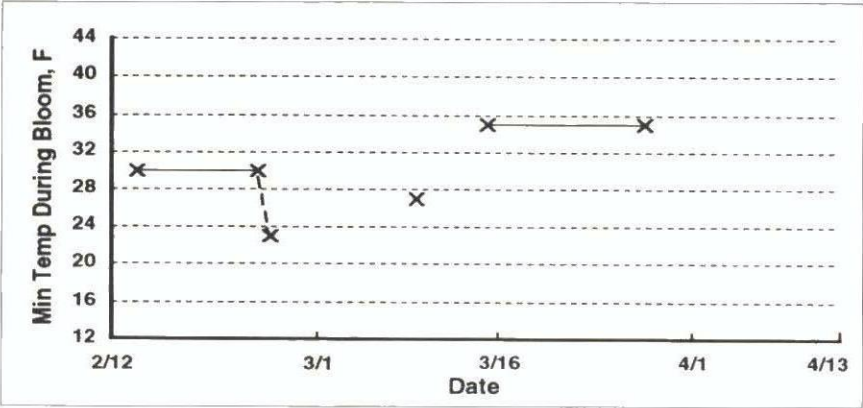


Figure 4 'Royal Crown' flowering periods (various years)

seedlings, which grow like weeds, that I feel obligated to at least find out how they perform.

My 'Betty' magnolia, a U.S. National Arboretum cross of *M. stellata* and *M. liliiflora*, generally blooms somewhat later than the magnolias previously described. Data shown in Figure 5 indicate flower hardiness down to at least 27 °F, although additional observations could better pin this down. It can be concluded that 'Betty' does not have quite the flower hardiness of the *loebneri* and *stellata* cultivars. Bloom time ranged from 8 to 23 days in 11 of the 13 years, with an average

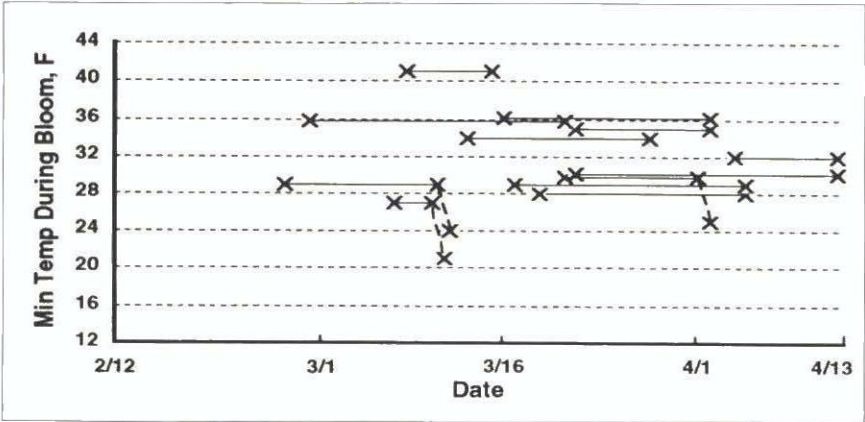


Figure 5 'Betty' flowering periods (various years)

of 16 days. Again, 1996 and 1998 were not good flowering years, although good blooming resumed in 1998 eighteen days after the freeze.

Data for 'Elizabeth,' a cross of *M. acuminata* and *M. denudata*, are shown in Figure 6. As with 'Betty,' hardiness may lie around 27 °F, but more observations are needed to pin this down. Bloom time for 'Elizabeth' ranged from 6 to 16 days in 8 out of 10 years, with an average of 10 days. In one year, a good bloom was aborted after one day by a drop to 25 °F. It was prevented entirely in another year by a 23°F temperature on March 22. Although the bloom period is always later than the other precocious magnolias, the tree is still susceptible to late freezes that prevent guaranteed bloom performance in Chattanooga.

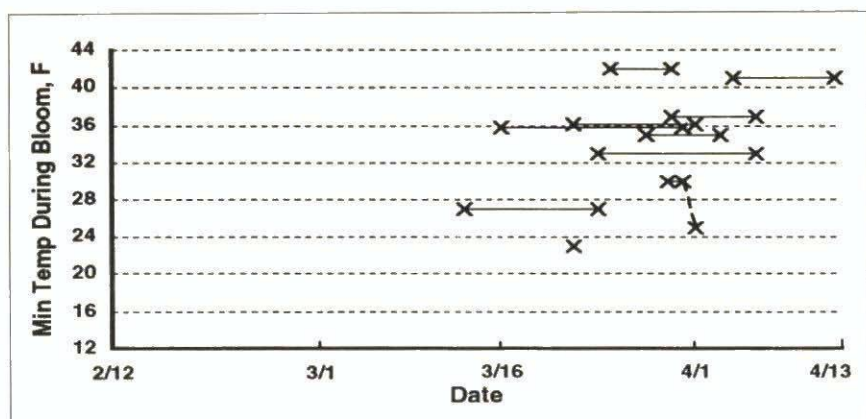


Figure 6 'Elizabeth' flowering periods (various years)

This article documents variation in flower hardiness among precocious magnolias. Since I am judging hardiness by the overall appearance of a plant, the term flower hardiness includes expanding buds and opening flowers as well as fully open flowers. The method of evaluation has been useful and illuminating, and it can be applied by anyone who records flower blooming and has access to concurrent temperature data.





**Magnolia 'Leonard Messel'**  
*Photograph by the author*

Information on average length of bloom for a magnolia, by itself, provides important information to be considered when selecting a new magnolia. I have known that 'Leonard Messel' and 'Betty' bloom longer than the others, but this has now been quantified. Other Society members are encouraged to compile and publish similar information. It would be nice to know, for example, the flower hardiness of *M. liliiflora*, *M. cylindrica*, *M. salicifolia* and *M. acuminata*, the average bloom time for 'Yellow Bird' versus 'Elizabeth,' flowering consistency for *loebneri* in Mobile and *soulangiana* in Rochester, etc. ☞

Note: I promised to identify the member who described the choking method for inducing magnolia flowering and inspired my article in a previous issue. He is Steve Herje of Hudson-on-St. Croix, to whom I am indebted.